

Claims 1 and 11 are the only Independent Claims pending in the present application.

Accordingly, for the purpose of simplifying the issues, the prior art rejection of the claims will be argued only with respect to Independent Claims 1 and 11. If these claims are allowed, the remaining dependent claims will be allowable, at least for the same reasons as their respective parent Independent claims.

As noted above, Independent Claims 1 and 11 have been rejected as being anticipated by the Hobhouse patent. For the reasons to be discussed below, Applicant respectfully disagrees with this basis for rejection.

Hobhouse discloses a method for controlling a rock drilling process with a rock drilling apparatus, in which the rock drilling apparatus includes power supply means for supplying power to the rock drilling process. The power supply means includes the sub-processes of rotation and flushing in which the method disclosed by Hobhouse comprises the steps of adjusting the flush power, and controlling rotational power and flush power.

Hobhouse discloses a method for controlling the weight applied to a drill bit. The system disclosed by Hobhouse has means by which the weight on the drill bit can be varied. The torque of the drill bit or drill string can be utilized as an input signal to a control system for controlling the weight applied on the drill bit. The flow of mud-flush, air or other fluid that is supplied to the drill bit can be measured and regulated, and can be used in the control of the weight of the drill bit.

In addition to the above, the method disclosed by Hobhouse is related to oil rigs in which holes of considerable depth are drilled, and in which the weight of the drill string can be substantial due to the substantial length of the drill string, particularly when the hole is drilled deep. Control of this weight is

addressed by Hobhouse, and means for relieving the weight of the drill bit is provided by an hydraulic cylinder allowing a reduction of the weight of the drill bit by providing a force in the upward direction, namely, a lifting action.

However, as will be apparent from the following discussion, Hobhouse does not teach, suggest, or disclose a system or method, as defined by Independent Claims 1 and 11, in which the flush power is adjusted at least partly as a function of the hole depth.

Hobhouse discloses two drill rig embodiments. In the first embodiment illustrated in Figures 1-7 of the drawing, the drill bit is rotated by rotating the drill string. When drilling is accomplished by rotating the entire drill string, mud-flush flow is increased upon an increase in torque as part of the method for reducing the weight (torque) on the drill bit. Accordingly, with regard to this embodiment, there is no control of the flush power in dependence upon the depth of the hole, as is expressly recited in Independent Claims 1 and 11.

In a second drill rig embodiment of Hobhouse, drilling is not accomplished by rotating the drill string, but is accomplished by a turbo driven drill bit operated (rotated) by mud-flush flow. Accordingly, in this embodiment, the torque applied on the drill bit is directly connected to the mud-flush, and thus the mud-flush is used for controlling the weight of the drill bit. A rise in torque in the drill bit can be sensed by sensing an increase in the mud-flush pressure (since it will be more difficult to rotate the drill bit), such that the mud-flush pressure can be used by the control system to determine if a torque reducing action is required, as for example, by increasing flow and reducing weight on the drill bit by providing a lifting action by means of the hydraulic lift cylinder.

In view of the disclosure of Hobhouse, it is clear that the flush power is controlled based on the torque on the drill bit and not based upon the hole depth. The Hobhouse Specification, at column 2, lines 46-50, discloses that a speed-torque-rate equation may be initially established, subsequent changes indicating strata alterations when compensated for change in depth of drilling, or change in bit characteristic due to wear. This does not, in any manner, teach or suggest that the flush power is controlled as a function of the hole depth. The only compensation with regard to varying depths is the compensation regarding strata alterations, which is not in any way relevant to the invention disclosed and claimed by Applicant.

It is well established that a rejection of a claim as being anticipated by a prior art reference requires in the Patent and Trademark Office to establish a strict identity of invention between the rejected claim and a single applied prior art reference. Stated in other words, a rejection of a claim as being anticipated by a prior art reference is improper unless a single applied prior art reference discloses all features of the rejected claim, as arranged in the claim. Connell v. Sears, Roebuck & Co., 220 USPQ 193 (Fed Cir 1983).

In the present application, it is clear that the Hobhouse does not teach or suggest an expressly recited feature of both Independent Claims 1 and 11, namely adjustment of flush power, at least partly, as a function of hole depth. Accordingly, there is clearly no strict identity of invention between the method and system defined by Independent Claims 1 and 11, and the disclosure of the Hobhouse patent, which does not disclose, teach, recognize or suggest the method and system defined by Independent Claims 1 and 11 when all positively recited features of these claims are considered in the patentability determination.

Applicant respectfully submits that Independent Claims 1 and 11 are in condition for allowance.

The remaining dependent claims, which depend on directly or indirectly from at least one parent independent claim, are allowable, at least for the same reasons as their respective parent independent claims.

Applicant respectfully submits that this application is in condition for allowance, and favorable action is respectfully requested.

Respectfully submitted,



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